

Introduction

This is a MPPT (maximum Power Point Tracking) smart solar controller, with charging and discharging function, increasing 30%~60% efficiency than traditional PWM controller. It has automatic recognition function, three Stages charging function, also supports many kinds of battery charging and discharging, RS232 communication etc, It's our company's MPPT solar controller e-SMART series.

Features

1. **MPPT charging mode, peak efficiency up to 99%**, saving 30%~60% solar panel than traditional PWM controller.
2. **DC12V/24V/48V battery system automatic recognition**, users would like to use in different system conveniently.
3. DC12V/24V/48V system, **maximum PV input voltage up to DC100V**.
4. Charge type: **three stages charge** fast charge(MPPT), constant voltage, floating charge, protected our battery, lead to a long use age.
5. Discharge type owns always on pattern and always off pattern, it also has PV voltage solar controlling switch pattern.
6. Clients can **auto select any one in the 4 kinds of commonly used batteries**, Sealed lead acid, vented, Gel, NiCd and custom other batteries.
7. **Digital tube display** controller battery voltage and charging current, upper computer display various parameters, such as model, PV input voltage, battery types, battery voltage, charging current, charging power, working condition etc.
8. **RS232 communication**, and that providing communication protocol, it's convenient for customer's integration management.
9. This controller could be **paralleled infinitely**.
10. **CE, RoHS FCC Certifications approved**; cooperating with clients through the other certifications.
11. **2 years warranty**; 3~10 years extended technical service.

Products photos





Parameters

| MPPT solar controller modes I-P-e-SMART-12V/24V/48V-series | | 15A | 20A | 25A | 30A | 40A |
|---|---|-----------------------|-----|-----|-----|-----|
| Charge mode | MPPT(maximum power point tracking) | | | | | |
| Charge method | Three stages: constant current(MPPT),constant voltage,floating charge | | | | | |
| System type | DC12V/24V/48V | Automatic recognition | | | | |
| System voltage | 12V system | DC9V~DC15V | | | | |
| | 24V system | DC18V~DC30V | | | | |
| | 48V system | DC36V~DC60V | | | | |
| Soft start time | 12V/24V/48V system | ≤3S | | | | |

| | | | | | | |
|--|--|---|------|------|------|------|
| Dynamic response recovery time | 12V/24V/48V system | 500us | | | | |
| MPPT efficiency | 12V/24V/48V system | ≥96.5%,≤99% | | | | |
| INPUT CHARACTERISTICS | | | | | | |
| MPPT working voltage range | 12V system | DC14V~DC100V | | | | |
| | 24V system | DC30~DC100V | | | | |
| | 48V system | DC60~DC100V | | | | |
| Low input voltage protection point | 12V system | DC14V | | | | |
| | 24V system | DC30V | | | | |
| | 48V system | DC60V | | | | |
| Low input voltage Recovery point | 12V system | DC18V | | | | |
| | 24V system | DC34V | | | | |
| | 48V system | DC65V | | | | |
| High input voltage protection point | 12V/24V/48V system | DC110 | | | | |
| High input voltage recovery point | 12V/24V/48V system | DC100V | | | | |
| Maximum PV power | 12V system (W) | 213 | 284 | 355 | 426 | 568 |
| | 24V system (W) | 426 | 568 | 710 | 852 | 1136 |
| | 48V system (W) | 852 | 1136 | 1420 | 1704 | 2272 |
| CHARGE CHRECTRESTICS | | | | | | |
| Selectable Battery Types (Default Gel battery) | 12V/24V/48V system | Sealed lead acid, Vented, Gel, NiCd battery (Other types of the batteries also can be defined)□ | | | | |
| Constant Voltage | 12V/24V/48V system | Please check the charge voltage according to the battery type form. | | | | |
| Floating Charge Voltage | 12V/24V/48V system | | | | | |
| Rated Input Current | 12V/24V/48V system | 15A | 20A | 25A | 30A | 40A |
| Current-limit Protection | 12V/24V/48V system | 20A | 25A | 30A | 35A | 45A |
| Temperature Factor | 12V/24V/48V system | ±0.02%/°C | | | | |
| Temperature Compensation | 12V/24V/48V system | 14.2V-(The highest temperature-25℃)*0.3 | | | | |
| Output Ripples(peak) | 12V/24V/48V system | 200mV | | | | |
| Output Voltage Stability Precision | 12V/24V/48V system | ≤±1.5% | | | | |
| Output Discharge Characteristics | | | | | | |
| Output voltage | Base on battery voltage | | | | | |
| Low voltage output Protection point | Default 10.5V; Recovery 11V; It can be adjustable. | | | | | |
| Rated output Current | 30A | | | | | |
| The output control | On mode, Off mode, PV voltage control mode | | | | | |
| Output control set mode | Controller button or PC software | | | | | |
| Display | | | | | | |

| | | | | | | | |
|-----------------------------------|--|--|--|-------------|--|--|--|
| LED digital tube display | Battery voltage, Charge current | | | | | | |
| LED light display | Charging indicator light, LOAD indicator light | | | | | | |
| PCcommunication port | RS232 | | | | | | |
| Protection | | | | | | | |
| Low input voltage protection | Check the input characteristics | | | | | | |
| High input voltage protection | Check the input characteristics | | | | | | |
| Charge overpower protection | yes | | | | | | |
| Discharge low voltage protection | yes | | | | | | |
| Discharge high current protection | yes | | | | | | |
| Temperature protection | yes | | | | | | |
| Other Parameters | | | | | | | |
| Noise | ≤40dB | | | | | | |
| Thermal heat-dissipating method | Itself cooling | | | Fan cooling | | | |
| Components | Imported material With EU standards. | | | | | | |
| Certification | CE\FCC\RoHS | | | | | | |
| Physical | | | | | | | |
| Measurement D x W x H(mm) | 205*168*60 | | | | | | |
| package size D x W x H(mm) | 265*196*110 | | | | | | |
| N.G(KG) | 1.8kg | | | | | | |
| G.N(KG) | 2kg | | | | | | |
| Mechanical Protection | IP25 | | | | | | |
| Environment | | | | | | | |
| Humidity | 0~90%RH (no condense) | | | | | | |
| Altitude | 0~3000m | | | | | | |
| Operating Temperature | -20℃ ~ +50℃ | | | | | | |
| Storage Temperature | -40℃ ~ +75℃ | | | | | | |
| Atmospheric Pressure | 70~106kPa | | | | | | |
| | | | | | | | |

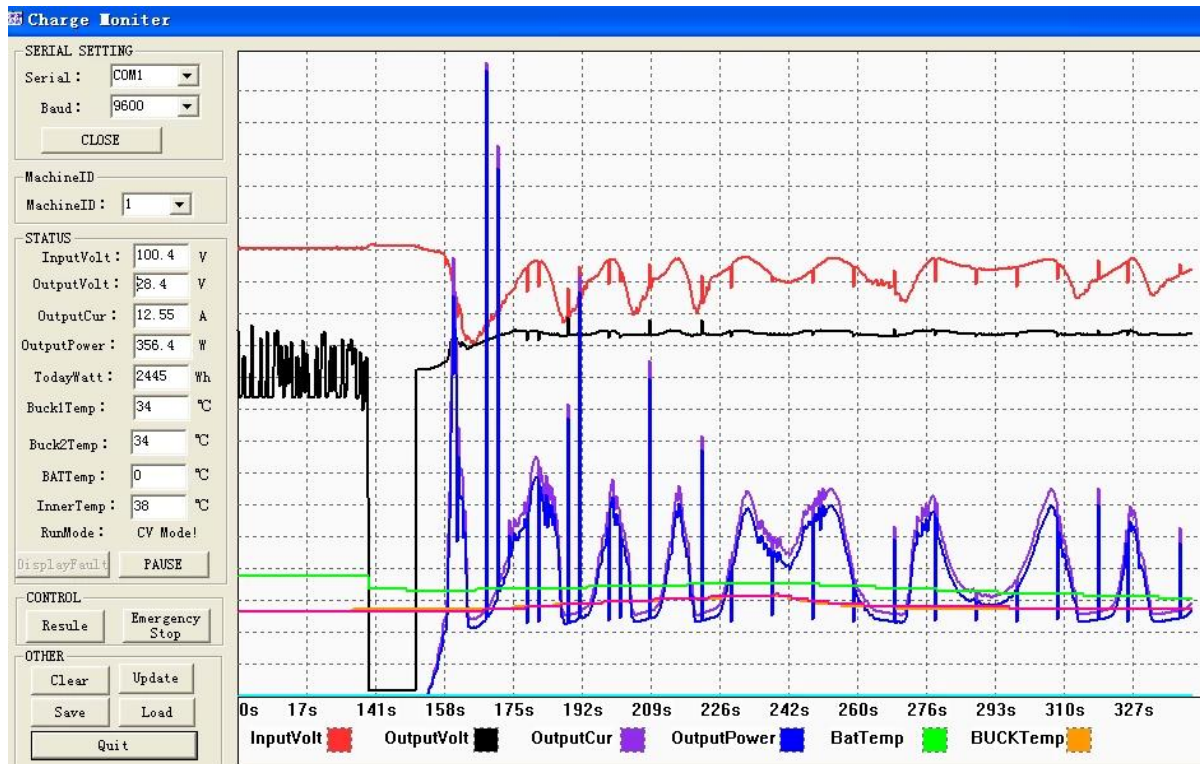
Connection diagram

The diagram illustrates a complete solar power system setup. Key components and their connections are as follows:

- Solar Panel:** The primary power source, connected to a **Breaker**.
- Mppt Solar Controller:** Receives input from the solar panel's breaker. It manages the power flow and is connected to a **DC Output** (represented by a light bulb) and the **Battery Box** through another **Breaker**.
- Battery Box:** Stores energy and is monitored by a **Temp. sensor**. It provides power to the **Solar Inverter** via a third **Breaker**.
- Solar Inverter:** Converts DC power from the battery into AC power, which is then distributed to various **AC Output** devices like a washing machine, printer, and refrigerator.
- PC:** A computer system connected to the solar controller via an **RS232** cable for monitoring and data logging.

The screenshot displays the SolarEagle software interface, which is used for monitoring and controlling solar power systems. The interface is organized into several key sections:

- Menu Bar:** Located at the top, it includes options for System(S), Control(C), Statistics(T), Language(L), and Help(H).
- Toolbar:** Below the menu bar, there is a row of icons representing various system components and functions, such as a solar panel, a battery, a light bulb, and a wrench.
- Main Workspace:**
 - Parameters setting Tab:** This is the active tab, showing a schematic diagram of a solar system. The diagram includes solar panels connected to a DC-DC converter, which is then connected to a battery and a light bulb. Below the diagram, there are fields for Battery type, Load type, Main firmware version, and Model name.
 - Input information:** This section displays real-time data for the system, including PV voltage (0.0 V) and Environment temperature (0.0 °C).
 - Charge information:** This section provides details about the charging process, such as Charge voltage (0.0 V), Charge power (0.0 W), Charge current (0.0 A), Total power (0.0 Wh), and Battery temperature (0.0 °C).
 - Real-time events:** This section contains a table for logging events. The table has four columns: ID, Level, Time, and Event. The table is currently empty.



Company photos





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